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Lo et al.

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(54) **DIGITAL RACK INTERFACE POD SYSTEM AND METHOD**

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Related U.S. Application Data

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(51) **Int. Cl.**

G06F 3/00	(2006.01)
G06F 15/16	(2006.01)
G06F 13/40	(2006.01)
G06F 3/023	(2006.01)

(52) **U.S. Cl.**
CPC ***G06F 13/4068*** (2013.01); ***G06F 3/023*** (2013.01)

(58) **Field of Classification Search**
None
See application file for complete search history.

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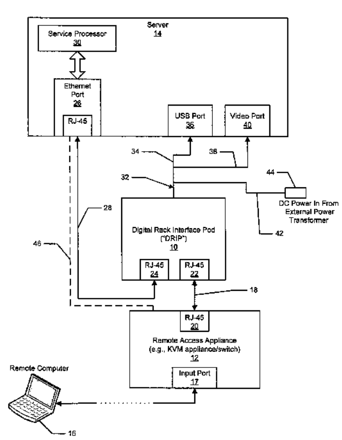
(57) **ABSTRACT**

A digital rack interface pod (DRIP) that is able to establish a communications link between a remote access appliance and a server having a USB port and a video port, to facilitate a keyboard/video/mouse (KVM) session between the server and the appliance. The DRIP is also able to establish a communications link between the appliance and an Ethernet port of the server that is associated with a service processor (SP) of the server. In this manner the DRIP is able to route data from the SP of the server to the appliance as well as communications from the appliance to the SP Ethernet port of the server. The DRIP is able to intelligently determine which packets of information received from the appliance are intended for the SP Ethernet port of the server and routes those packets to the SP Ethernet port of the server. The DRIP also automatically monitors and dynamically reassigns its two Ethernet ports as needed so that whichever one of its two Ethernet ports it discovers a connection with the appliance on will be the port that it continues using to communicate with the appliance.

20 Claims, 7 Drawing Sheets



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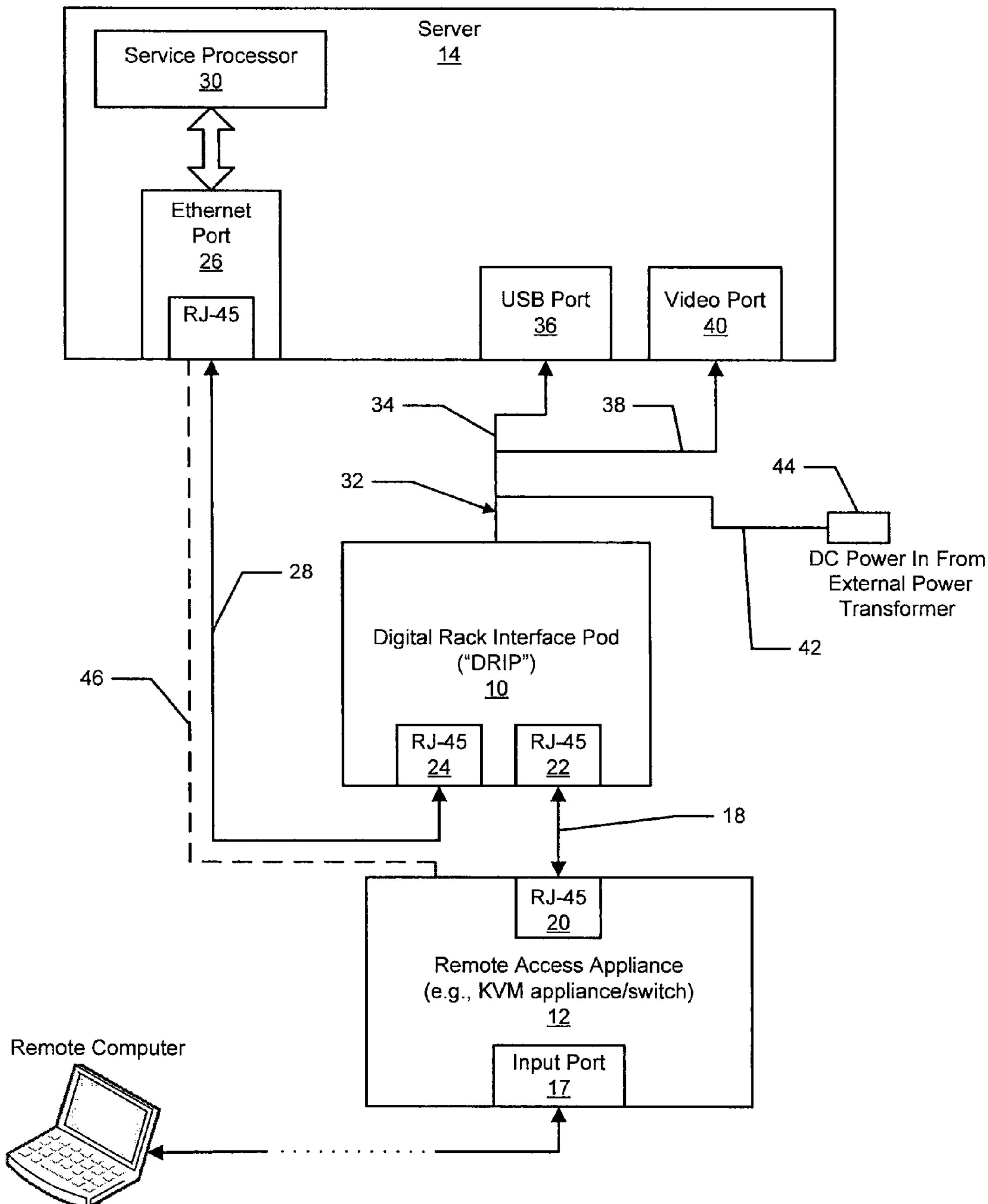
Server
14
Service Processor
30
Ethernet
Port
26
RJ-45
USB Port
36
Video Port
40
34
38
32
44
DC Power In From
External Power
Transformer
28
42
Digital Rack Interface Pod
("DRIP")
10
46
RJ-45
24
RJ-45
22
18
RJ-45
20
Remote Access Appliance
(e.g., KVM appliance/switch)
12
Input Port
17
Remote Computer
16

FIGURE 1

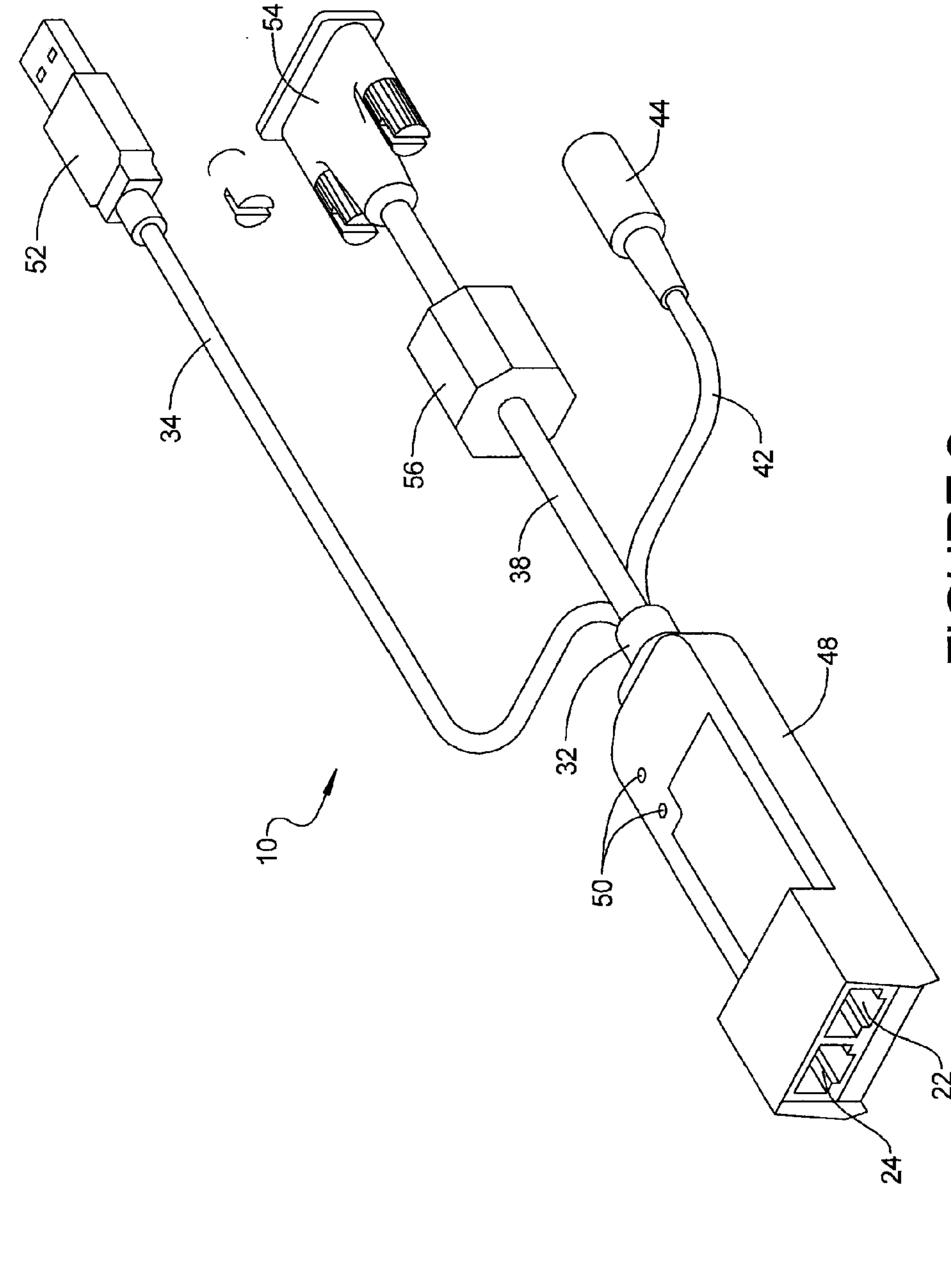

FIGURE 2

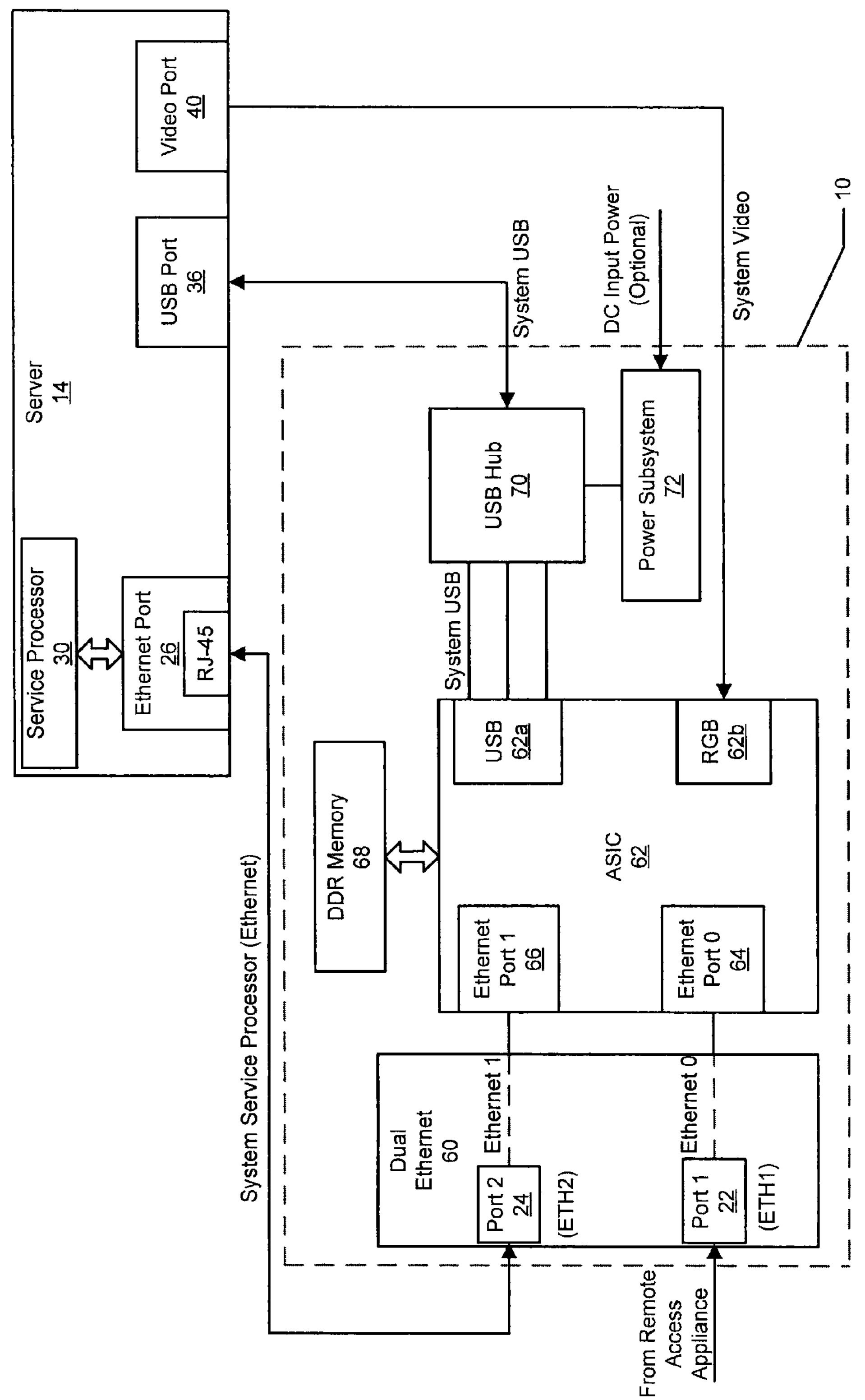
Server
14
Video Port
40
USB Port
36
Service Processor
30
Ethernet Port
26
RJ-45
System USB
DC Input Power
(Optional)
System Video
10
USB Hub
70
Power Subsystem
72
System USB
USB
62a
RGB
62b
DDR Memory
68
ASIC
62
Ethernet
Port 1
66
Ethernet
Port 0
64
System Service Processor (Ethernet)
Dual
Ethernet
60
Ethernet 1
Ethernet 0
Port 2
24
(ETH2)
Port 1
22
(ETH1)
From Remote
Access
Appliance

FIGURE 3

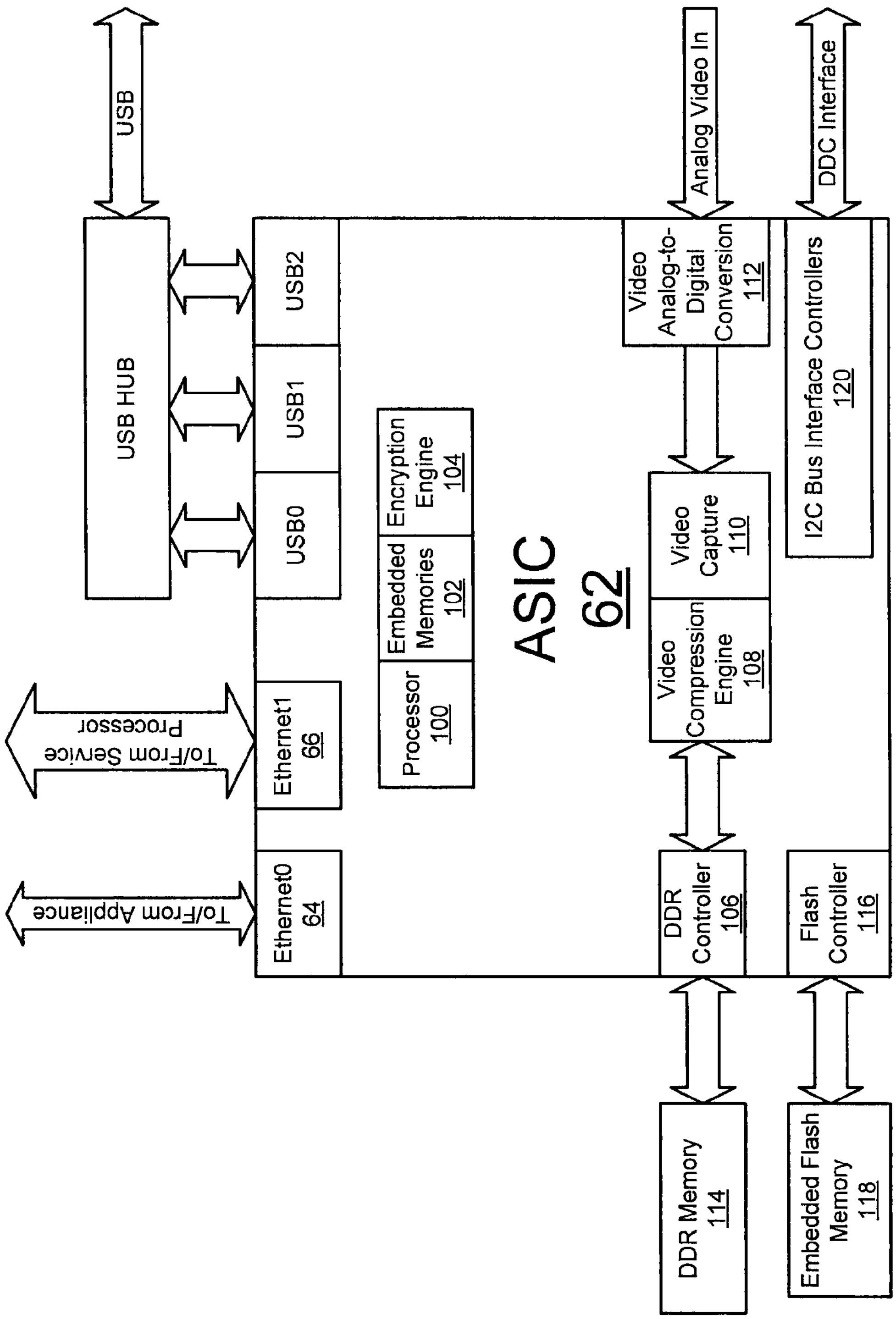
USB
USB HUB
USB2
USB1
USB0
Ethernet1 66
To/From Service Processor
Ethernet0 64
To/From Appliance
Encryption Engine 104
Embedded Memories 102
Processor 100
ASIC 62
Analog Video In
DDC Interface
Video Analog-to-Digital Conversion 112
I2C Bus Interface Controllers 120
Video Capture 110
Video Compression Engine 108
DDR Controller 106
Flash Controller 116
DDR Memory 114
Embedded Flash Memory 118

FIGURE 3A

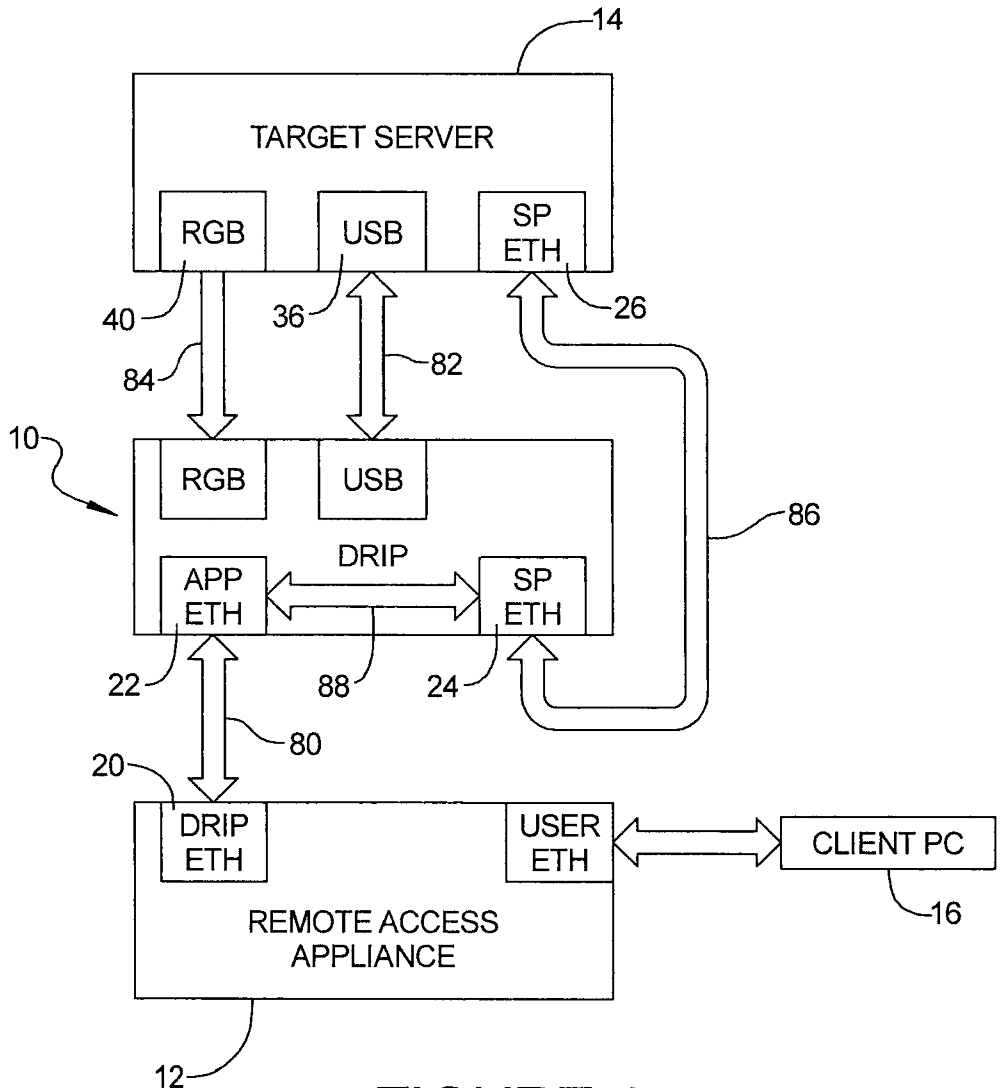
14
TARGET SERVER
RGB
USB
SP
ETH
40
36
26
84
82
10
RGB
USB
86
DRIP
APP
ETH
SP
ETH
22
88
24
80
20
DRIP
ETH
USER
ETH
CLIENT PC
16
REMOTE ACCESS
APPLIANCE
12

FIGURE 4

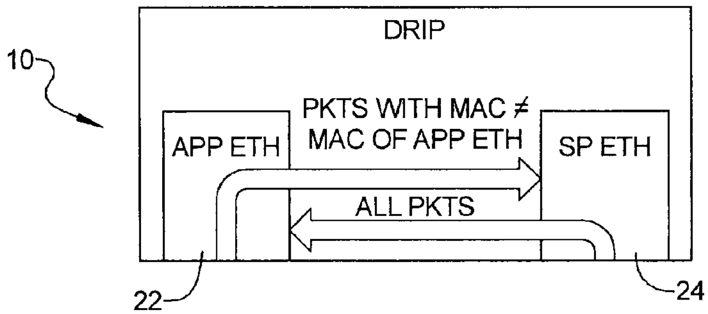

FIGURE 5

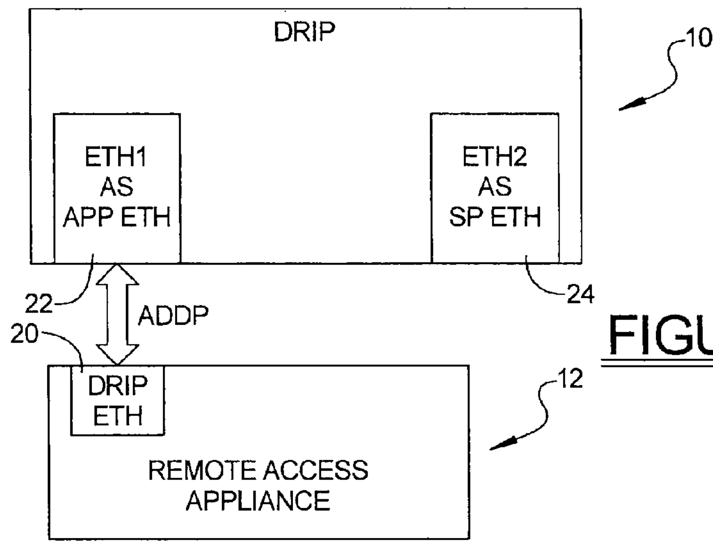

FIGURE 6A

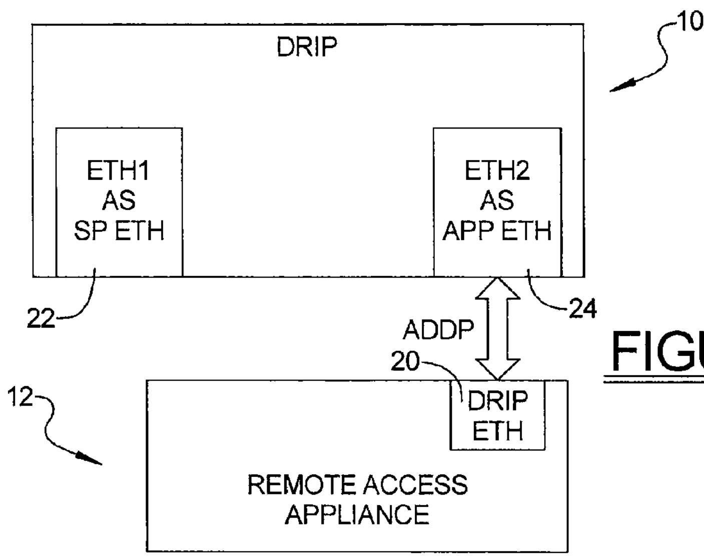

FIGURE 6B

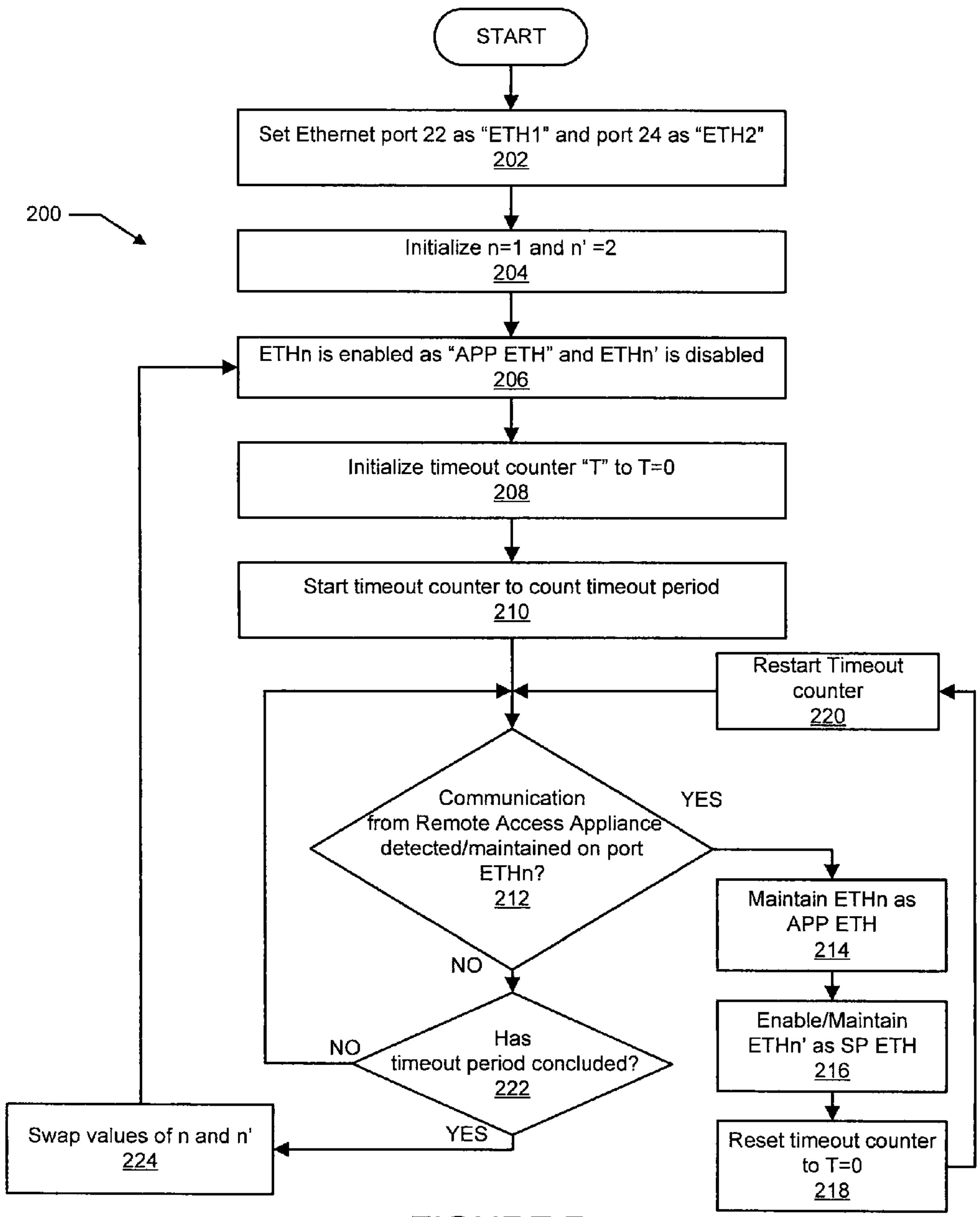
START
Set Ethernet port 22 as "ETH1" and port 24 as "ETH2"
202
200
Initialize n=1 and n' =2
204
ETHn is enabled as "APP ETH" and ETHn' is disabled
206
Initialize timeout counter "T" to T=0
208
Start timeout counter to count timeout period
210
Restart Timeout counter
220
Communication from Remote Access Appliance detected/maintained on port ETHn?
212
YES
Maintain ETHn as APP ETH
214
NO
Enable/Maintain ETHn' as SP ETH
216
NO
Has timeout period concluded?
222
YES
Swap values of n and n'
224
Reset timeout counter to T=0
218

FIGURE 7

DIGITAL RACK INTERFACE POD SYSTEM AND METHOD

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of U.S. Provisional Application No. 61/389,616 filed on Oct. 4, 2010 and U.S. Provisional Application No. 61/487,590 filed on May 18, 2011. The disclosures of the above applications are incorporated herein by reference.

FIELD

The present disclosure relates to components used to interface a remote access device to server within a data center environment, and more particularly to a digital rack interface pod that enables interfacing a remote access device to an Ethernet port of a server, as well as to serial and video ports of the server.

BACKGROUND

The statements in this section merely provide background information related to the present disclosure and may not constitute prior art.

In a data center environment, often a remote access appliance is used to access and communicate with one or more servers located within the data center environment. In some instances the remote access appliance may form an appliance that allows keyboard and mouse commands from a remote computer to be transmitted to the server, and video signals to be transmitted from the server back to the remotely located computer. Typically a rack interface pod is used to interface the remote access appliance to the server. The rack interface pod is coupled between an Ethernet output of the remote access appliance and the serial and video ports of the server. Typically one rack interface pod is used per server. The rack interface pod operates to digitize analog video signals being output from the video port of the server and to place the digitized video signals into Ethernet protocol format. The digitized signals, in Ethernet protocol format, are then transmitted back to the remote access appliance and then forwarded on to the remote computer that is communicating with the server.

Many present day servers also include an Ethernet port that allows a remote device to access and receive information generated by a service processor within the server. The service processor is a separate processor, typically mounted on a motherboard, that may provide highly useful information concerning a wide variety of performance metrics of the server. Such performance metrics may involve information from various types of sensors built into the server that relate to various parameters such as temperature, cooling fan speeds and power status, as well as other valuable metrics. However, until the present time, interfacing to the Ethernet port associated with the service processor has been accomplished only by the use of a separate cable (often a Cat5 cable), and a separate connection to the remote access appliance. That is, the Ethernet traffic associated with the service processor metrics has not been able to be handled by (i.e., routed through) the rack interface pod. Of course, this necessitates considerable extra cabling and the use of an extra port on the remote access appliance. When one considers that large scale data centers may involve hundreds or even thousands of servers, one can easily gain an appreciation of the significant added expense that the requirement of a separate cable and data port

to handle service processor Ethernet traffic can result in. The additional cabling can also contribute to producing a somewhat "cluttered" environment around each of the servers.

BRIEF DESCRIPTION OF THE DRAWINGS

The drawings described herein are for illustration purposes only and are not intended to limit the scope of the present disclosure in any way.

FIG. **1** is a perspective view of a digital rack interface pod ("DRIP") in accordance with one embodiment of the present disclosure;

FIG. **2** is a perspective view of one embodiment of the DRIP of FIG. **1**;

FIG. **3** is a high level block diagram of major subsystems of the DRIP of FIG. **1**;

FIG. **3**A is a high level block diagram of major components of the ASIC shown in FIG. **3**;

FIG. **4** is a high level block diagram shown a flow of data between the remote access appliance and the server through the DRIP;

FIG. **5** is a high level block diagram of the DRIP shown how data packets flow between the two Ethernet ports on the DRIP;

FIGS. **6**A and **6**B are high level block diagrams showing how the two DRIP Ethernet ports may be configured to act as the port communicating directly with the DRIP; and

FIG. **7** is a flowchart illustrating one example of a sequence of operations that may be used to detect for communications from the DRIP on either one of the two Ethernet ports of the DRIP.

DETAILED DESCRIPTION

The following description is merely exemplary in nature and is not intended to limit the present disclosure, application, or uses. It should be understood that throughout the drawings, corresponding reference numerals indicate like or corresponding parts and features.

Referring to FIG. **1** there is shown a digital rack interface pod ("DRIP") **10** in accordance with one embodiment of the present application. For convenience, the digital rack interface pod will be referred to throughout the following discussion as the "DRIP" **10**. In this example the DRIP **10** is used to interface a remote access appliance **12** with a server **14**. However, it will be appreciated that the DRIP **10** could be potentially be used to interface to any component having a video source and/or USB keyboard/mouse port.

A remote computer **16** or other form of computing device may be in communication with the remote access appliance **12** either via a wide area network, such as the Internet, or via a hard wired connection. The computer **16** may be located remotely from the remote access appliance **12** or may be located in close proximity to the remote access appliance **12**. The DRIP **10** may be interfaced to the remote access appliance by a suitable cable **18**, such as a Cat5 cable, that connects to an Ethernet port **20** of the remote access appliance **12**. The other end of the cable **18** may be coupled to a first port **22** of the DRIP **10**. The first port **22** may be formed by any suitable jack, but in one preferred form the first port is formed by an RJ-45 jack.

The DRIP also may include a second port **24**, which may also be formed by an RJ-45 jack. In one embodiment the first and second ports **22** and **24** may be formed as a single, custom modular jack. The second port **24** may be interfaced to an Ethernet port **26** of the server **14** by a suitable cable **28**. The cable **28** may also be a Cat5 cable. The Ethernet port **26** may also be formed by an RJ-45 jack. The Ethernet port **26** is in communication with a service processor **30** of the server **14**. The service processor monitors a plurality of important operating parameters of the server **14** such as temperature, cooling fan speeds, power status, operating system status, just to name a few. The service processor **30** provides information relating to these metrics to the DRIP **30** via signals output from its associated Ethernet port **26**.

The DRIP **10** also includes a cable assembly **32** having a portion **34** that interfaces to a serial port, for example a USB port **36**, of the server **14**, and a portion **38** that interfaces to a video port **40** (typically a VGA port) of the server **14**. A major function of the DRIP **10** is to receive keyboard and mouse commands from the computer **16** and to format such commands into serial format, and then to forward them in serial format to the server **14** via cable portion **34**. Another major function of the DRIP **10** is to receive analog video signals from the server's video port **40**, digitize and format them into Ethernet protocol, and then output the video information in Ethernet format from first port **22** to the remote access appliance **12**.

With further reference to FIG. **1**, The cable assembly **32** may also include a portion **42** having a suitable plug or jack **44** for receiving DC power from an external DC power transformer. This provides the ability to power the DRIPs **10** internal components via the external DC power transformer. Typically, however, the DRIP **10** will be powered by DC power supplied from the USB port **36** of the server **14**.

Referring briefly to FIG. **2**, an illustration of one embodiment of the DRIP **10** is shown. The DRIP **10** includes a housing **48** within which the first and second ports **22** and **24**, respectively, are housed. The housing **48** may include one or more LEDs **50** for status notification (e.g., flashing during firmware upgrade), or to locate the DRIP **10** by turning on an LED on demand by a user. Cable portion **34** may include a USB connector **52** and cable portion **38** may include a VGA connector **54**. Cable portion **42** may include the jack **44**, which is shown as a barrel jack in this implementation. A conventional ferrite bead **56** may be included to help reduce RF emissions from the cable **38**.

A principal feature of the DRIP **10** is its ability to handle communications between the remote access appliance **12** and the service processor **30** of the server **14**. Previously used rack interface pods have required the use of a separate cable, shown by dashed lines **46**, that interfaced to a separate port on a remote access appliance. In other words, the communications between the service processor **30** and the remote access appliance **12** did not pass through the DRIP **10**. From a practical standpoint, this arrangement can necessitate significant extra cabling (i.e., such as cable **46**). This is because the DRIP **10** is typically located in close physical proximity to the server **14**, and often within 2-4 feet of the server's USB port **36** and video port **40**. So the additional cabling required to interface the DRIP **10** to the Ethernet port **26** is quite minimal (typically less than 6 feet). However, the remote access appliance **12** may be located at some distance, possibly up to 300 feet or more, from the server **14**. For example, if the server **14** was located about 250 feet from the remote access appliance **12**, then cable **46** shown in FIG. **1** would require a length of at least about 250 feet. Cable **18** shown in FIG. **1** would also typically require a similar length. If the remote access appliance **12** was interfaced to 40 servers, with each server needing to have its Ethernet port interfaced to the remote access appliance **12**, then 40 lengths of cabling **46** would be required with each having a length of about 250 feet. In effect, by enabling the DRIP **10** to handle the Ethernet communications between the remote access appliance **12** and the server **14**, the amount of cabling required to accomplish this interfacing is dramatically reduced. The degree of reduction may be on the order of about one-half of the cabling that would otherwise be required if the DRIP **10** was not able to handle the Ethernet communications to/from the service processor **30**. It will also be appreciated that the dramatic reduction in cabling required when the DRIP **10** is used makes for a significantly less cluttered installation.

Referring now to FIG. **3**, a high level block diagram of the internal components of the DRIP **10** is shown. The DRIP **10** may include a dual Ethernet jack **60** which includes the first and second ports **22** and **24**. The dual Ethernet jack **60** communicates with an application specific integrated circuit (hereinafter "ASIC") **62**. The ASIC **62** includes ports **64** and **66** for receiving the Ethernet communications present on ports **22** and **24**. The ASIC has access to a double data rate (DDR) memory **68** for storing information during processing. A conventional USB hub **70** interfaces the ASIC **62** to the USB cable portion **34** of cable assembly **32**. The ASIC **62** is also interfaced to the video cable portion **38** of cable assembly **32**. A power subsystem **72** receives DC power from the jack **44** over cable **42** when the jack **44** is coupled to an external DC power transformer, or DC power over cable portion **34** of the cable assembly **32** when the DRIP **10** is being powered in its typical operation state by power from the server's USB port **36**.

FIG. **3**A illustrates a high level block diagram of major components of the ASIC **62**. The ASIC **62** may include a processor **100**, a plurality of embedded memories **102** and an encryption engine **104**. The encryption engine **104** is used for hardware encryption of data communicated to the appliance **12**. A DDR controller **106** communicates with a DDR memory **114** and with a video compression engine **108**. The video compression engine **108** is in communication with a video capture subsystem **110**. The video compression engine **108** provides compression of live PC video such that the compressed video data can be stored into memory and transferred across a bus or network using minimal memory and bandwidth. The video capture subsystem **110** performs synchronization, detection and scaling of a video signal received by the ASIC **62**. The video capture subsystem **110** receives an output from a video analog-to-digital conversion subsystem **112**, which in turn receives an analog video input signal. The video capture **110** subsystem takes analog output from the server **14** and converts it to digital format. A flash controller **116** communicates with an embedded flash memory **118** to handle the execution of application code for boot up of the DRIP **10**. An I2C bus interface controller communicates with a DDC interface bus, which informs the server **14** what video capabilities are supported by the DRIP **10** (e.g., screen resolution).

Referring now to FIGS. **4**-**7**, a description of how the DRIP **10** is monitoring for, as well as routing, Ethernet packets received from the appliance **12** will be presented. Initially in FIG. **4** it can be seen that port **22** has been labeled "APP ETH" and port **24** has been labeled "SP ETH". Ethernet packets flow bidirectionally between the appliance **12** and the DRIP **10**, as indicated by bidirectional arrow **80**. A bidirectional serial communications link exists between the DRIP USB port and the server's **14** USB port, as evidenced by bidirectional arrow **82**. Video signals are received from the RGB (i.e., video) port **40** of the server **14**, as indicated by arrow **84**. Ethernet packets are also transmitted bidirectionally between the server **14** Ethernet port **26** and the SP ETH port **24** of the DRIP **10**, as indicated by arrow **86**. Arrow **88** indicates that Ethernet packets originating from the server's Ethernet port **26**, or being transmitted to the port **26**, may be transmitted between the two ports **22** and **24** of the DRIP **10**.

In FIG. **5**, within the DRIP **10** Ethernet packets are able to flow in both directions between the APP ETH port **22** and the SP ETH port **24**. All packets that are received from the server **14** at SP ETH port **24** of the DRIP **10** are routed within the DRIP **10** to its port APP ETH **22**. However, for packets received from the appliance **12** at the DRIP's APP ETH port **22**, only those packets that have a MAC address that is not equal to the MAC address of the DRIP's APP ETH port **22** will be routed to the SP ETH port **24**. Those Ethernet packets that are not routed to the APP ETH port **24** will have the DRIP's **10** MAC address. These packets will be converted to serial protocol signals.

Referring briefly to FIGS. **6**A and **6**B, it can be seen that the appliance **12** may be coupled to either the Ethernet port **22** or the Ethernet port **24**. As will be described in greater detail below, the DRIP **10** is able to dynamically and automatically assign either of the ETH**1** port **22** or the ETH**2** port **24** as "APP ETH" (i.e., the port that the DRIP **10** recognizes as being directly coupled to the appliance **12**.

Referring to FIG. **7** a flowchart **200** is shown illustrating one example of various operations of a discovery and communications protocol referred to as "ADDP" (Avocent DRIP Discovery Protocol) that may be performed by the DRIP **10** in detecting a communication from the appliance **12**. This sequence of operations assumes that the DRIP has not yet been coupled via a Cat5 or other suitable cable to the output port **20** of the appliance **12**. Initially (as shown in FIG. **6**A) at operation **202**, Ethernet port **22** is set to "ETH**1**" and Ethernet port **24** is set to "ETH**2**". At operation **204** the ASIC **62** sets a variable "n" equal to "1" and a variable "n'" equal to "2". At operation **206** ETHn is then enabled as "APP ETH" on the DRIP **10** and the other Ethernet port on the DRIP is disabled. Thus, in this configuration, as shown in FIG. **6**A, port **22** (i.e., ETH**1**) will be set as the port (i.e., port APP ETH) which the DRIP **10** will initially start monitoring for communications coming from the appliance **12**.

At operation **208** a timeout counter is initialized and then the timeout counter is started at operation **210**. At operation **212** the ASIC **62** of the DRIP **10** begins monitoring port ETHn of the DRIP **10** (i.e., port ETH**1** or port **22**, which is now acting as the APP ETH port) for a signal from the DRIP **10**. If a communication is received from the appliance **12** at port ETHn, then port ETHn is maintained as the APP ETH port, as indicated at operation **214**, and port ETHn' is maintained as port SP ETH port (i.e., assigned to communicate with the Ethernet port **26** of the server **14**), as indicated at operation **216**. At operation **218** the timeout counter is reset to zero. At operation **220** the ASIC **62** restarts the timeout counter and operation **212** is repeated.

If the check made by the ASIC **62** at operation **212** does not detect a communication with the appliance **12**, then a check is made at operation **222** to determine if a predetermined timeout period has been reached by the timeout counter. In practice this timeout period may typically be on the order of 500 ms, although this period could be adjusted if desired. If the check at operation **222** indicates that the timeout counter has not timed out, then operation **212** is repeated. If the check at operation **222** indicates that the timeout timer has timed out, then at operation **224** the ASIC **62** toggles the Ethernet port assignments on the DRIP **10** by swapping the values of n and n' (i.e., n=1 and n=2 to n=2 and n'=1). At operation **206** this has the effect of setting Ethernet port **24** on the DRIP as the APP ETH port and deactivating port **22**. The timeout counter is then reset to zero at operation **208**, the timeout counter is restarted at operation **210** and operation **212** is repeated by the ASIC **62**. However, at this point the ASIC **62** will be checking for communications from the appliance **12** at port **24** (which is now assigned as the APP ETH port). If a communication from the appliance **12** is detected at operation **212** before the timeout counter times out at operation **22**, then the DRIP **10** will continue using Ethernet port **24** as the APP ETH port. Thus, from the foregoing description it will be appreciated that the ASIC **62** will toggle the ports **22** and **24** when the timeout counter has timed out. In this manner the ASIC **62** will intermittently be looking at one Ethernet port (**22** or **24**) on the DRIP **10** and then the other until it detects a communication from the appliance **12**.

The ASIC **62** thus provides the advantage that the user is able to hook up the output Ethernet port **20** of the appliance **12** to either of the two Ethernet ports **22** or **24** on the DRIP **10**, and the ASIC **62** will still be able detect when it is receiving a communication from the appliance **12**. If the user should disconnect the Ethernet output port **20** of the appliance **12** from, for example port **22**, and then reconnect it using port **24** of the DRIP **10**, the ASIC **62** will be able to detect this change as it periodically toggles the two ports **22** and **24** looking for a communication from the appliance **12**. Once it receives a communication from the appliance **12** on one of the Ethernet ports **22** or **24**, it dynamically makes the needed adjustment of the port assignments on the DRIP **10** so that that port will thereafter be designed as the APP ETH port on the DRIP **10**. Thus, the Ethernet port assignment implemented on the DRIP **10** by the ASIC **62** is not only automatic but it is dynamic as well. If the Ethernet cables are swapped at run-time, the Ethernet port assignments will be swapped by the ASIC **62** without the need for the DRIP **10** or the appliance **12** to be rebooted.

Still further detailed information on the ADDP protocol is presented in "Appendix A" attached hereto. From the Appendix A it will be appreciated that the ADDP not only facilitates the DRIP **10** discovering that it has a connection with the appliance **12**, but it also facilitates the appliance discovering that it has a "valid" connection with a DRIP (in this case DRIP **10**). Thus, the appliance **12** is assured that it is communicating with the DRIP **10** and not some other Ethernet device. The ADDP also supports authentication, i.e. for the appliance **12** to authenticate a KVM or Virtual media session to the DRIP **10**. It may even be used to enable "low-power" mode in the event the DRIP **10** is able to be powered from a backup power source (power provisioned to the DRIP by the Appliance).

What is claimed is:

1. A standalone digital rack interface pod apparatus adapted to facilitate communications between a remote access appliance and a server, where the appliance is disposed remotely from the server and in communication with a user's electronic device, and where the server has a service processor accessible via a service processor port, the apparatus comprising:

- a housing having a first bidirectional communications port and a second bidirectional communications port, at least one of the first and second bidirectional communications ports enabling a first communications cable to be coupled thereto to enable a connection to be made to the remote access appliance, and the other one of the bidirectional communications ports enabling a second communications cable to be coupled thereto to enable a connection to be made between the apparatus and the service processor port of the server;
- a cable assembly extending from the housing for enabling the apparatus to be coupled to a video port and to a universal serial bus (USB) port of the server;

a circuit disposed in the housing in communication with at least the first and second bidirectional communication ports, the circuit configured to monitor communications from the appliance to the apparatus and to detect the presence of information received by the apparatus, and required to be sent to the service processor of the server, and to route the information identified as needing to be sent from the appliance to the one of the first and second bidirectional communications ports that is coupled to the second communications cable, to thus enable the information to be transmitted to the service processor port of the server, and to route a remaining portion of the information to the USB port via the other one of the first and second bidirectional communications ports.

2. The apparatus of claim **1**, wherein the first bidirectional communications port includes an RJ-45 port.

3. The apparatus of claim **1**, wherein the second bidirectional communications port includes an RJ-45 port.

4. The apparatus of claim **1**, wherein the housing includes:

a first RJ-45 port that forms a portion of the first bidirectional communications port; and

a second RJ-45 port that forms a portion of the second bidirectional communications port.

5. The apparatus of claim **1**, wherein the circuit comprises an application specific integrated circuit (ASIC).

6. The apparatus of claim **5**, wherein the ASIC is configured to alternately scan the first and second bidirectional communication ports to detect when information is initially received from the appliance on one or the other of the first and second communications ports, and to set the one of the first and second communications ports that initially receives a communication from the appliance as the port that is to thereafter communicate with the appliance.

7. The apparatus of claim **5**, wherein the first and second bidirectional communication ports each comprise Ethernet ports, and wherein the information communicated between the apparatus and the appliance comprises Ethernet packets.

8. The apparatus of claim **6**, wherein the ASIC is configured to detect a MAC address of an Ethernet packet received from the appliance, and if the MAC address of the received Ethernet packet does not match a MAC address assigned to the apparatus, then the apparatus routes the received Ethernet packet to the one of the Ethernet ports that is in communication with the service processor port of the server.

9. The apparatus of claim **7**, wherein all of the Ethernet packets received that have a MAC address that matches the MAC address of the apparatus are treated as not being intended to be communicated to the service processor port of the server.

10. The apparatus of claim **1**, further comprising a USB hub disposed within the housing and adapted to be coupled via a USB jack to the cable assembly.

11. The apparatus of claim **1**, further comprising a double data rate (DDR) memory in communication with the circuit.

12. A standalone digital rack interface pod (DRIP) apparatus adapted to facilitate communications between a remote access appliance and a server having a service processor, the apparatus comprising:

a housing;

a first Ethernet port and a second Ethernet port disposed in the housing, the first Ethernet port adapted to enable a first communications cable to be coupled thereto to enable a connection to be made to an appliance, and the second Ethernet port adapted to enable a second communications cable to be coupled thereto to enable a connection to be made with a service processor port of the server;

a cable assembly extending from the housing for enabling the apparatus to be removably coupled to a video port and to a universal serial bus (USB) port of the server; and

a circuit disposed in the housing and being in communication with at least the first and second Ethernet ports, and configured to detect the reception of Ethernet packets from the appliance which are directed to either of the first and second Ethernet ports, and to automatically route ones of the detected Ethernet packets needing to be delivered to the service processor of the server to the second one of the Ethernet ports, and to route a remainder of the detected Ethernet packets to the USB port of the cable assembly.

13. The apparatus of claim **12**, further comprising a USB hub in communication with the circuit, for interfacing the circuit with the USB port of the server.

14. The apparatus of claim **12**, wherein the circuit comprises an application specific integrated circuit (ASIC).

15. The apparatus of claim **14**, wherein the ASIC continuously, alternately monitors the first and second Ethernet ports when the apparatus is initially connected to the appliance, and detects which of the first and second Ethernet ports initially receives Ethernet packets having a MAC address that matches a MAC address assigned to the apparatus, and subsequently sets the one of the first and second Ethernet ports that initially receives the Ethernet packets with a MAC address matching the MAC address of the device as the port that is to be treated as the Ethernet port in communication with the appliance.

16. The apparatus of claim **15**, wherein the ASIC detects which said ones of the received Ethernet packets have a MAC address that does not match the MAC address assigned to the apparatus, and routes said ones of the Ethernet packets that have a MAC address that does not match the MAC address of the apparatus to the one of the Ethernet ports that is coupled to the second cable, to thus route said ones of the Ethernet packets to the service processor of the server.

17. The apparatus of claim **14**, wherein the ASIC continuously, alternately monitors the first and second Ethernet ports each for a predetermined time period.

18. A method for facilitating communications between an appliance and a server, wherein the server includes a service processor accessible via a service processor port, the method comprising:

providing a standalone apparatus having a circuit housed within a housing of the apparatus, to interface the appliance to the server, the apparatus having a first bidirectional communications port adapted to communicate with the appliance via a first communications cable, and a second bidirectional communications port adapted to communicate with the service processor port via a second communications cable;

further interfacing the apparatus to a universal serial bus (USB) port of the server and to a video port of the server via a cable assembly extending from the housing;

using the circuit to monitor for the presence of information received at either of the first and second bidirectional communications ports;

using the circuit to determine which portions of the information received are intended for the service processor of the server, and

routing the portions of the information intended for the service processor to the second bidirectional communications port, and routing a remaining portion of the information via the cable assembly to the USB port of the server.

19. The method of claim **18**, further comprising alternately monitoring the first and second bidirectional communications ports for predetermined time periods to detect an initial packet of the received information, and assigning the one of the bidirectional communications port that the initial packet of received information is received on as the port that is to receive all further information packets of the received information.

20. The method of claim **18**, further comprising need to be directed by the apparatus and monitor a circuit in communication with at least the first and second bidirectional communication ports, the circuit configured to monitor communications from the appliance to the apparatus and to detect the presence of information being sent to the service processor of the server, and to route the information to the one of the first and second bidirectional communications ports that is coupled to the second cable, to thus enable the information to be transmitted to the service processor port of the server.

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